

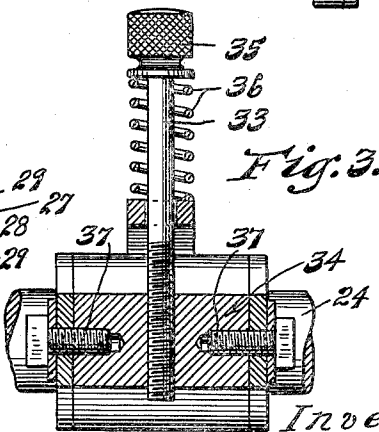
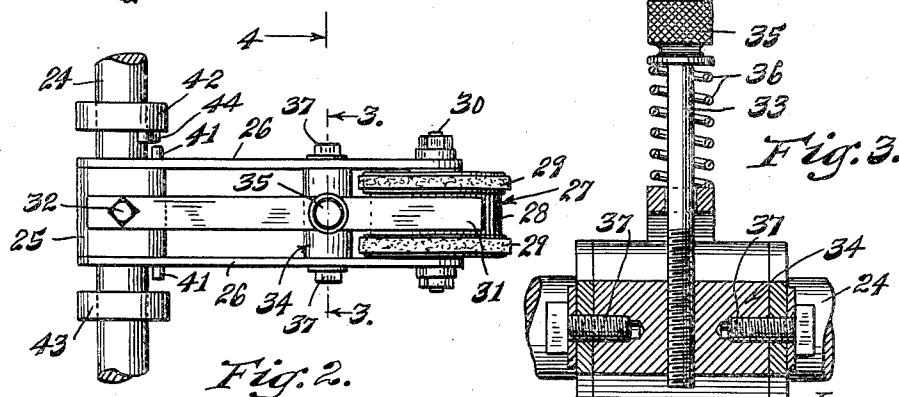
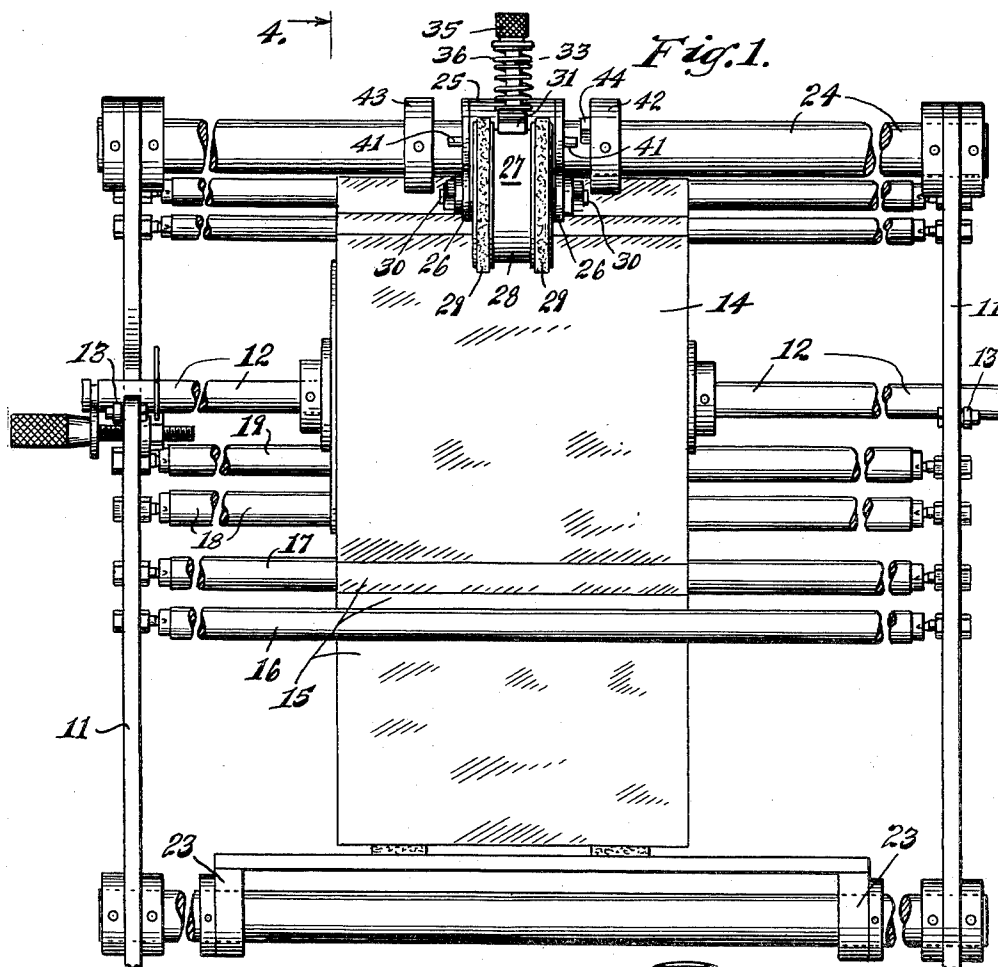
May 13, 1952

D. W. O'MALLEY
TENSIONING DEVICE

2,596,428

Filed July 16, 1949

2 SHEETS—SHEET 1



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2 SHEETS—SHEET 2

Fig. 4.

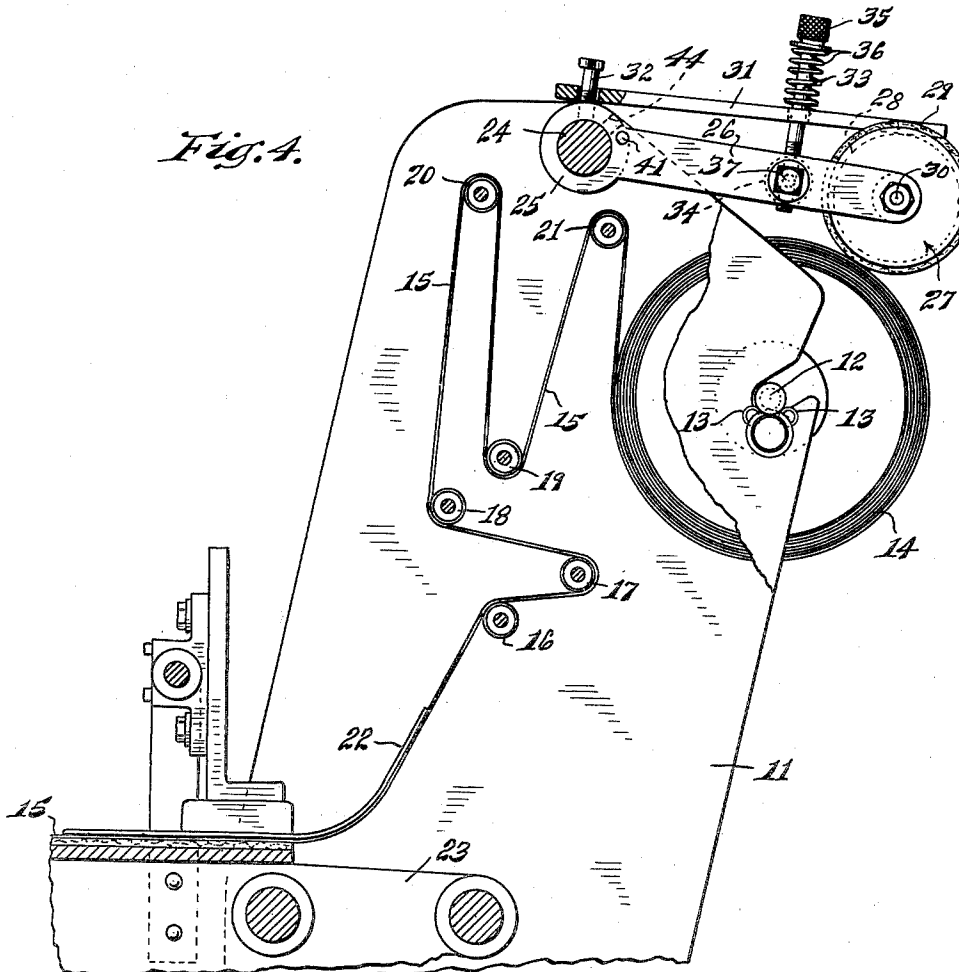
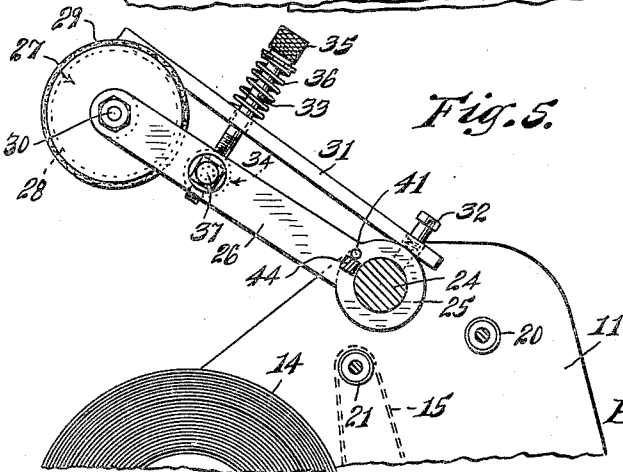


Fig. 5.



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UNITED STATES PATENT OFFICE

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TENSIONING DEVICE

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1 Claim. (Cl. 242-75)

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This invention relates to tensioning devices and particularly to tensioning devices for applying a braking force to material as it is withdrawn from a roll or reel and fed to a machine for various purposes. Such devices are used to maintain tension on the material being withdrawn from a roll so that the proper amount of material at the proper rate is withdrawn from the roll at all times. The invention is applicable to a large variety of materials such as, for example, paper, cellophane, metal foil, wire, thread and the like. The invention is also applicable to a machine wherein the material is fed continuously, as well as where such material is fed intermittently.

Tensioning devices have heretofore been utilized for the purpose described, but all of them of which I am aware, have the braking force varied with the amount of material present on the roll. It was thought such variation was necessary because of the change in the peripheral speed of the roll itself. However, I have found that a brake which operates on the material being unreel and in which the braking force is maintained constant provides a more satisfactory tensioning device than those disclosed in the prior art. This statement, of course, assumes that there is low friction in the bearings supporting the rotating roll of material.

It is an object of the invention to provide an improved tensioning device for maintaining material being withdrawn from a roll in constant tension as it is being fed to a machine.

It is also an object of the invention to provide a tensioning device in which the braking force may be readily adjusted for different types of materials and different rates of feed.

It is also an object of the invention to provide a tensioning device in which the braking force is constant and which contacts only the material on the roll prior to the time it is fed to the machine.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my device whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claim and illustrated in the accompanying drawings, wherein:

Figure 1 is an elevational view of a portion of a cellophane bag making machine to which the invention may be applied, showing the improved tensioning device.

Figure 2 is a top view of the tensioning device.

Figure 3 is a sectional view of the tensioning device taken on line 3-3 of Figure 2.

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Figure 4 is a sectional view of the machine taken on line 4-4 of Figure 1; and

Figure 5 is a side view of the tensioning device when in its raised position.

Referring specifically to the drawing for a detailed description of the invention, numeral 11 designates the side frames of the machine and numeral 12 designates the shaft or axle upon which the roll of material, shown at 14, is mounted. The shaft 12 is preferably supported on roller bearings 13 so that there is very little resistance to rotation of the shaft 12 and the roll 14. The sheet of material being fed from the roll is shown at 15.

As best shown in Figures 1 and 4, the sheet of material 15 is withdrawn over a series of rollers 16, 17, 18, 19, 20 and 21 as is usual in machines of this type. The sheet of material 15 is fed to the bag making machine, generally indicated at 23, by means of a guide 22. In machines of this type the feed is generally intermittent, although my invention is not limited thereto.

The tensioning device is mounted on a cross bearing 24. A pair of collars 25 are rotatably mounted on the member 24 and support the tensioning device. A forked lever arm 26 is secured to the collars 25 and is provided with a shaft 30 adjacent the end thereof on which is mounted a brake wheel generally indicated at 27. The brake wheel preferably comprises a metal spool 28 with raised edges 29 of a material of high coefficient of friction, which are formed by applying a band of leather, for example, to both edges of the spool 28. The lever arm 26 and the rotatable wheel 27 are arranged so that the wheel 27 will ride on the roll of material 14 at all times as the material is being withdrawn from the roll 14.

A flexible strap 31, preferably formed of metal, is secured to the collar 25 adjacent the top thereof and extends from the collar in a direction to contact the metal portion 28 of the wheel 27 to act as a brake on the wheel 27. The strap 31 is secured to the collar 25 by a bolt 32.

The braking force which the strap 31 produces may be varied by means of a spring 36 and a threaded adjusting member 33, which has an adjusting knob 35 secured thereto. The threaded adjusting member 33 threads into a block 34 as best shown in Figure 3. The block 34 is held in position by bolts 37 which extend through the forked lever arm 26.

Both of the forks of the lever arm 26 are provided with lugs 41 and collars 42 and 43 and are rigidly secured to the cross member 24 to limit

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lateral movement of the lever arm 26. A lug 44 is provided on one of the collars 42 and is so positioned that the lever arm 26 may be raised and the entire brake assembly moved laterally, so that the lugs 41 and 44 engage to retain the lever arms 26 in the raised position, as shown in Figure 5.

Operation

When a roll of material is placed on the machine, the lever arm 26 is in the position shown in Figure 5. Before the machine is started, the lever arm 26 is lowered so that the leather peripheries 29 of wheel 27 rest on the roll of material 14. The machine is then started and material is withdrawn from the roll 14. The brake force is adjusted by varying the force of the spring 36 and, when adjusted, the braking force remains constant for the remainder of the operation of the machine, at least with respect to the roll of material then used. It will be apparent that the braking or tensioning force is always constant no matter how much of the material has been withdrawn from the roll 14, since the length and weight of the lever arm 26 remain constant and the lever arm swings about the fixed cross member 24. The braking force applied by the strap 31 on the metal part 28 of the wheel 27 likewise normally remains constant.

As stated above, it has been found that a very satisfactory tensioning device results from using constant tensioning force directly on the material which is being withdrawn from the roll 14. Whether the feed is constant or intermittent, it has been found that the amount of material and the rate of feed does not vary to any appreciable degree when this type of brake is used.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claim any modified forms of structure or use of mechanical equivalents which may be reasonably included within its scope.

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I claim as my invention:

A tensioning device for maintaining tension on material being withdrawn from a roll of such material, which roll is rotatably supported on bearings, said device comprising a lever arm, means for pivotally supporting said lever arm at a fixed location adjacent one end thereof and a brake means secured adjacent to the other end of the lever arm, said brake means being so positioned that it engages the outer periphery of said roll of material at all times during withdrawal of said material from the roll, said brake means thereby exerting constant tensioning force on said material being withdrawn and being the sole instrumentality for retarding rotation of said roll except for minimum bearing friction, said brake means comprising a wheel rotatably secured to said lever, said wheel having a material of relatively high co-efficient of friction secured to the periphery thereof, which material is adapted to engage the roll and a frictional brake member adapted to contact the wheel to retard rotation thereof, said frictional brake member contacting a portion of the wheel other than the portion having the material of high co-efficient of friction thereon.

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